IN THE CLAIMS

Please AMEND claim 1 as indicated below:

1. (Currently amended)

A fluid level sensor for use in a fluid container, comprising:

a single ultrasonic transceiver having a measurement section and a reference section separated by an insulating section, said measurement and reference sections ~~are each able~~ **each being able** to both transmit and receive ultrasonic signals,

a housing component having both a reference element and an aperture axially spaced from said ultrasonic transceiver, said measurement section transmits ultrasonic measurement signals that pass through said aperture to reflect off of a fluid surface, and said reference section transmits ultrasonic reference signals that reflect off of said reference element, and

a mounting bracket having a linkage component for maintaining said ultrasonic transceiver in a generally parallel disposition to a fluid surface.

2. (Original)

The fluid level sensor of claim 1, wherein said measurement section and said aperture are disk-shaped, said reference section and said reference element are ring-shaped, and all of which are generally concentric.

3. (Original)

The fluid level sensor of claim 2, wherein said measurement section is located beneath said aperture such that a portion of said ultrasonic measurement signals pass through said aperture, and said reference section is located beneath said reference element such that a portion of said ultrasonic reference signals reflect off of an underside of said reference element.

4. (Original)

The fluid level sensor of claim 1, wherein said measurement section includes a metalized layer electrically connected to a first electrical lead, and said reference section includes a metalized layer electrically connected to a second electrical lead.

5. (Original)

The fluid level sensor of claim 4, wherein energization of said first electrical lead causes said measurement section to transmit said ultrasonic measurement signals, and energization of said second electrical lead causes said reference section to transmit said ultrasonic reference signals.

6. (Original)

The fluid level sensor of claim 1, wherein said ultrasonic transceiver is comprised of a piezo-ceramic composition.

7. (Original)

The fluid level sensor of claim 1, wherein said fluid level sensor further includes an impedance layer located between said ultrasonic transceiver and the surrounding fluid.

8. (Original)

The fluid level sensor of claim 7, wherein an upper surface of said ultrasonic transceiver is bonded to a lower surface of said impedance layer.

9. (Original)

The fluid level sensor of claim 1, wherein said fluid level sensor further includes a damping pad located beneath said ultrasonic transceiver.

10. (Canceled)

11. (Previously Presented)

The fluid level sensor of claim 1, wherein said mounting bracket further includes a retaining element that is cup-shaped and is closed at a lower axial end and open at an upper axial end such that it may receive said housing component.

12. (Previously Presented)

The fluid level sensor of claim 1, wherein said linkage component includes one or more linkage arms that are biased such that said fluid level sensor is maintained against the bottom of the fluid container.

13. (Original)

The fluid level sensor of claim 1, wherein said sensor is a fuel level sensor for use in a vehicle fuel tank.

14. (Previously Presented)

The fluid level sensor of claim 13, wherein said mounting bracket is mounted to a fuel sender unit.

15. (Previously Presented)

The fluid level sensor of claim 13, wherein said mounting bracket is mounted to the fuel tank.

16. (Original)

The fluid level sensor of claim 1, wherein said fluid level sensor is coupled to an electronic controller such that said controller is capable of providing a reference transmission signal and a measurement transmission signal to said sensor that causes said sensor to transmit said ultrasonic reference signals and said ultrasonic measurement signals, respectively, and wherein said fluid level sensor is capable of providing a reference reception signal and a measurement reception signal to said controller upon reception of said ultrasonic reference signals and said ultrasonic measurement signals, respectively.

17. (Original)

The fluid level sensor of claim 16, wherein said controller is capable of determining the velocity of said ultrasonic reference signals by using the time difference between when said reference transmission signal was sent and when said reference reception signal was received.

18. (Original)

The fluid level sensor of claim 17, wherein said controller is capable of determining a velocity-corrected fluid level measurement by utilizing the velocity calculation of claim 17 and the time difference between when said measurement transmission signal was sent and when said measurement reception signal was received.

Claims 19-28 (Cancelled)

29. (Original)

A method for measuring the fuel level within a vehicle fuel tank, comprising the steps of:

(a) providing a fuel level sensor having ultrasonic measurement and reference sections,

(b) providing a reference element located at a known distance from said ultrasonic reference section,

(c) causing said ultrasonic reference section to emit ultrasonic reference signals that pass through the fuel to reflect off of said reference element,

(d) determining the roundtrip echo time of said ultrasonic reference signals,

(e) causing said ultrasonic measurement section to emit ultrasonic measurement signals that pass through the fuel to reflect off of a surface of the fuel,

(f) determining the roundtrip echo time of said ultrasonic measurement signals,

(g) determining whether the surface of the fuel is at a level that is at or below said reference element, and

(h) if the surface of the fuel is above said reference element then determining a fuel level measurement based on the roundtrip echo times of both said ultrasonic reference and measurement signals, and if the surface of the fuel is at or below said reference element then determining a fuel level measurement based on the

roundtrip echo time of said ultrasonic measurement signal and a default ultrasonic signal velocity.

30. (Original)

The method of claim 29, wherein said default ultrasonic signal velocity is based upon a predetermined fixed velocity value.

31. (Original)

The method of claim 29, wherein said default ultrasonic signal velocity is based upon the last calculated velocity value that was valid.

32. (Original)

The method of claim 29, wherein said fuel level measurement must fall within a range of predetermined values.

33. (Original)

The method of claim 29, wherein said ultrasonic reference signals are emitted sequentially with respect to said ultrasonic measurement signals.

34. (Original)

The method of claim 29, wherein said method further comprises the steps of:

(i) storing said fuel level measurement,

(j) determining a second fuel level measurement, and

(k) if said second measurement is greater than said stored measurement then incrementing said stored measurement by a predetermined step value, if said second measurement is equal to said stored measurement then keeping said stored measurement the same, and if said second measurement is less than said stored measurement then decrementing said stored measurement by a predetermined step value.

35. (Original)

The method of claim 34, wherein said predetermined step values for incrementing and decrementing are unequal.

36. (Original)

The method of claim 29, wherein said method further comprises the step of determining the signal velocity of said ultrasonic reference signal by using said roundtrip echo time of said ultrasonic reference signals and said known distance between said ultrasonic reference section and said reference element.

37. (Original)

The method of claim 36, wherein said method further comprises the step of determining the temperature of the fuel by using said signal velocity.

38. (Original)

The method of claim 29, wherein said method further comprises the step of continuously storing said fuel level measurement such that if power is removed, the last stored measurement may be reported.

39. (Original)

The method of claim 38, wherein said fuel level measurement is stored by using a technique that reduces the number of write cycles to a non-volatile memory device.

40. (Cancelled)

41. (Previously Presented)

A fuel level sensor assembly for use in a fuel tank having a fuel sender unit, comprising:

an ultrasonic transceiver having a measurement section and a reference section that are each able to both transmit and receive ultrasonic signals,

a housing component having both a reference element and an aperture axially spaced from said ultrasonic transceiver, said measurement section transmits ultrasonic measurement signals that pass through said aperture to reflect off of a fuel surface, and said reference section transmits ultrasonic reference signals that reflect off of said reference element, and

a mounting bracket having a cup-shaped retaining element for receiving said housing component, a linkage component, and an attachment feature for attaching said fuel level sensor assembly to the fuel sender unit, wherein said linkage component helps maintain said ultrasonic transceiver in a generally parallel disposition to the fuel surface.

42. (Previously Presented)

A fluid level sensor system for use with a fluid container, comprising:

an ultrasonic transceiver having a measurement section capable of providing an electronic signal in response to receiving an ultrasonic signal, and a reference section also capable of providing an electronic signal in response to receiving an ultrasonic signal,

a housing component having a reference element located at a known position such that it reflects some ultrasonic signals towards said reference section, and

an electronic controller coupled to said ultrasonic transceiver for receiving said electronic signals, wherein if said ultrasonic transceiver provides said electronic controller with an electronic signal indicating that the surface of the fluid is at or below said reference element, then said electronic controller utilizes a default ultrasonic signal velocity to determine a fluid level measurement.

43. (Previously Presented)

The system of claim 42, wherein said default ultrasonic signal velocity is based upon a predetermined fixed velocity value.

44. (Previously Presented)

The system of claim 42, wherein said default ultrasonic signal velocity is based upon the last calculated velocity value that was valid.